GOES-R represents a quantum leap in the timeliness, quantity, and accuracy of remotely sensed meteorological data. With a breakthrough space-based sensor capability collecting more data at faster rates, a ground system equally transformational is required to deliver the advancements expected by NOAA and the nation. Harris’ state-of-the-art enterprise ground system communicates with and controls the GOES-R Series spacecraft, receives the raw data from the onboard instruments, and prepares the data for distribution to the National Weather Service’s Advanced Weather Interactive Processing System (AWIPS) and more than 10,000 direct users to ensure protection of lives and property.

GROUND SYSTEM INFRASTRUCTURE
The GOES-R ground system is installed across three sites in Maryland, Virginia, and West Virginia. Thousands of data storage servers, hundreds of computer workstations with specialized software, and about 100 miles of interconnecting cables comprise the enterprise ground system. In order to provide near-real-time weather information within seconds to the National Weather Service and other users, the system is designed in a highly reliable and secure manner.

SATELLITE COMMUNICATION, TELEMETRY, COMMAND, AND CONTROL
Uplink and downlink communication with the GOES-R Series satellites and their instruments is facilitated by six, new 16.4-meter tri-band antennas, built to withstand a category 2 hurricane. The ground system also performs telemetry, tracking, and control of the GOES-R constellation of satellites and their onboard instruments.

DATA PROCESSING AND MANAGEMENT
Data processing power for the ground system requires 40 trillion floating point operations per second to transform about 16 terabytes of data per day from each satellite into usable intelligence, capable of producing several terabytes of data products every day.